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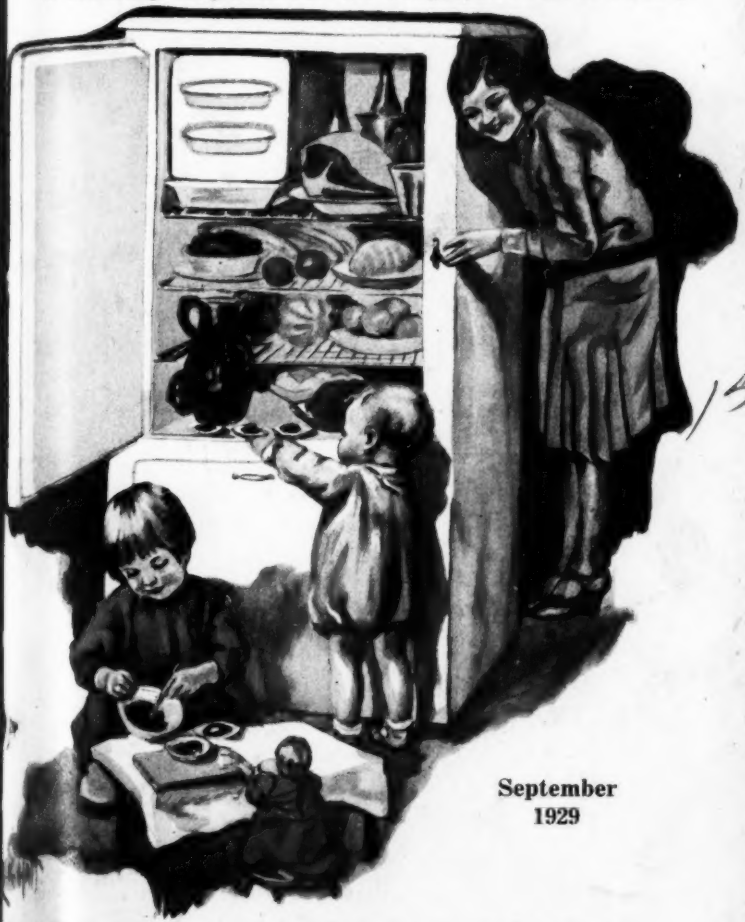
# Electricity on the Farm

*A Monthly Magazine for the Progressive Rural Family*



September
1929

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# Mrs. W. H. Kinney, Elbridge, N.Y. says: *"Oh, so clean!"*

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*Hattie M. Kinney (Mrs. W. H.)*

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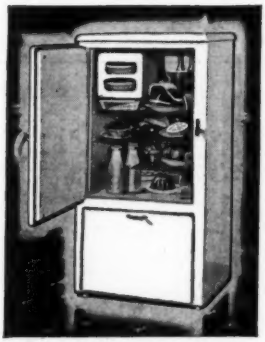

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# KELVINATOR

*We Endorse the National Food Preservation Campaign for September*

# Electricity on the Farm

Vol. 2 SEPTEMBER 1929 No. 9

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# The Pleasure of Electric Cooking

*now within your reach!*

FORTUNATE indeed are the farm women who have "high-line" current at their doors... for they can know the freedom from drudgery and the real pleasure of cooking that comes with a Monarch Electric Range. Thirty years of experience has taught us how to design ranges particularly adapted to the needs of the farm kitchen. The built-in kitchen heater, pictured above, is a popular feature of several Monarch models. The Monarch's "Speed-Oven" brings added convenience and economy. Made in Sunshine-Yellow, Nile-Green or immaculate White, these beautiful enameled Monarchs are a source of delight to the woman who takes pride in her kitchen.

Let us send you an interesting booklet, showing them in their natural colors.

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ELECTRIC RANGE

**Malleable Iron Range Co.**
400 Lake Street, Beaver Dam, Wis.

# GOOD NEWS!

## a New WESTING

## Electric Water

### AUTOMATIC!

HERE at last is an electric water system that is *automatic* in every sense of the word. Plenty of running water at the kitchen sink . . . the luxury of a modern bathroom . . . water on tap, at the turn of a faucet, in any part of your home, barn, or outbuildings . . . all these and countless other conveniences can be yours more easily and *for less money* when you install a new Westinghouse Electric Water System.

Developed and backed by the unlimited experience and resources of Westinghouse, this remarkable new water system offers you, at a surprisingly low price, features never before offered at *any* price.

#### *Draws Water from Any Source*

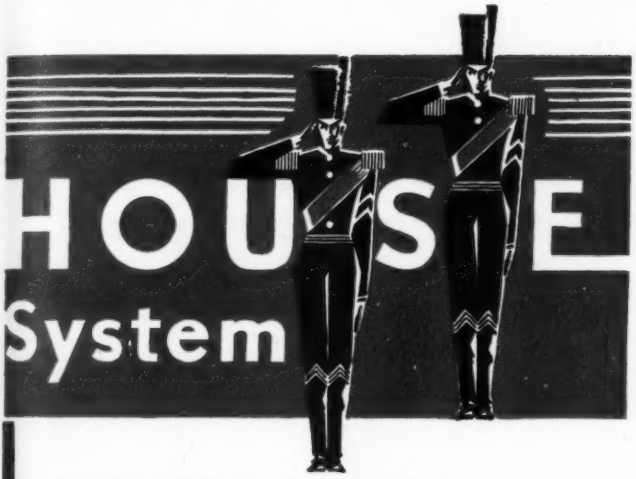
This new Automatic Electric Water System will draw water from a cistern . . . deep or shallow well . . . spring . . . stream . . . or lake. Or, if you're already connected with a water main that gives a sickly trickle of water, this new system is the ideal unit to boost your water pressure and supply you with a strong, steady flow for all purposes.

#### *Two Automatic Guardsmen Always on Watch*

The new Westinghouse Automatic Electric Water System is *completely* automatic. It requires no attention. It starts itself . . . stops itself . . . watches itself. Two mechanical "Guardsmen"—the Automatic Electric Pressure Switch and the Automatic Air Volume Control and Pressure Gauge—keep constant watch. The first Guardsman starts and stops the pump at the proper time *automatically*.

TYPE W-300 A

Westinghouse Automatic Electric Water System for Shallow Wells. Will supply the average country and suburban home with sufficient water for all requirements. The ideal unit for increasing pressure of city water system.




The second keeps the right proportion of air and water in the tank, thereby preventing it from becoming water-logged. Thus you are relieved of any care of a Westinghouse System.

### *The Coupon Will Bring You the Facts and Prices*

There's a size and model of Westinghouse Automatic Water System to meet your particular needs. Let our Water System engineers tell you what type will serve you best and how little a complete Westinghouse installation will cost. You'll be agreeably surprised at the low price and the convenient monthly payments. Fill out, and mail, the coupon below. No obligation to buy.

# Westinghouse

## ELECTRIC WATER SYSTEMS

(AUTOMATIC)

Westinghouse Electric & Manufacturing Company,
Small Electric Plant Section, East Pittsburgh, Pa.

Please send me information regarding the type of Westinghouse Automatic Electric Water System I need to meet the following requirements:

My source of water supply is Well.....Cistern.....Spring.....Lake.....
The well is.....feet deep. Dug ..... Bored..... Driven.....
Number of people in family.....Number of rooms in house.....Stories.....
Number head of stock .....
We use about.....gallons of water daily.
We have electricity.....
The highest point to which water will be forced above pump is.....
Name.....
Address..... State.....

# The Prater Farm Mill now Grinds Ear Corn Just as Satisfactorily as Small Grains

INTRODUCED a little over two years ago, the Prater Farm Mill has been steadily growing in favor with the American farmer.

Low grinding costs—averaging less than 2c. per hundred — satisfactory service (backed by a rigid guarantee), convenience (entirely automatic operation when properly installed), are a few of the reasons for the popularity of the Prater Farm Mill.

Now the Prater Pulverizer Company announces the PRATER AUTOMATIC EAR CORN BREAKER AND FEEDER—an attachment which enables the Prater Farm Mill to grind ear corn—AUTOMATICALLY.

*Be sure and see the Prater Farm Mill, equipped with the new Prater Automatic Ear Corn Breaker and Feeder, exhibited at your Fair.*

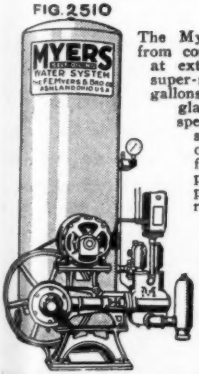
**PRATER PULVERIZER CO.**
**817 W. Washington Blvd.**
**Chicago, Ill.**

## "You Rest, Mother, *We'll do the Dishes*"

IT doesn't require nearly as much coaxing to get "help with the dishes" when there is plenty of running water on tap. Why not find out—right now—how little it will cost to get a real water system for your farm. Clean, sparkling-fresh water always on tap—in kitchen, bathroom, laundry—for lawn, garden and garage—in barns and feed lots—for drinking, washing, fire protection! Check up the hours you spend lugging water from place to place—doing by hand what can be done far better by a few cents worth of gasoline or electric power. You need a water system for your farm—and you need a genuine Myers outfit to assure that your investment will be a permanent improvement.

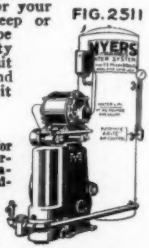
# MYERS Self-Oiling Water Systems

FIG. 2510




The Myers line offers you practically unrestricted choice—from complete electrically-operated or gasoline-engine outfits, at extremely low prices, for the small home to super-service plants with capacities up to 10,000 gallons per hour. Your nearest Myers dealer will gladly advise you as to the best outfit for your special needs. Whether you have a deep or shallow well, and regardless of the type of power you wish to employ—electricity from central station or your own unit plan—windmill—gasoline engine—hand pump—there is a modern Myers unit ready to serve you.

FIG. 2511

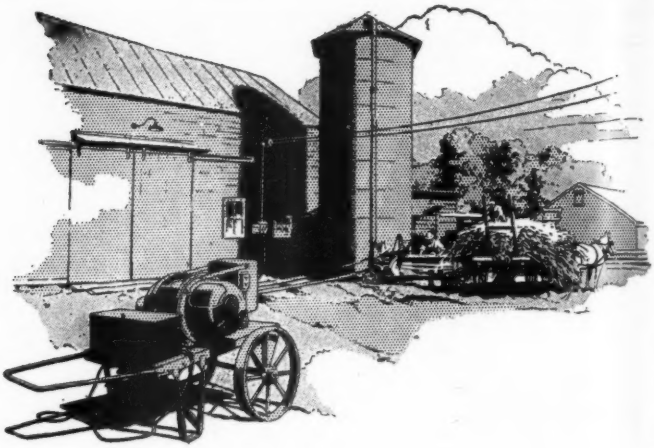



Write today to "world's headquarters for pumps for every purpose" for name of nearest Myers dealer and secure, without obligation, booklet of interesting facts on dependable, honor-built water systems.

**The F. E. Myers & Bro. Co.**
365 Orange St., Ashland, Ohio

Makers for over 50 years of Myers Pumps for every Purpose, Hay Tools and Door Hangers

Take Off Your Hat to the MYERS



# *Where Motors are cheaper than Muscle*

**Let the electric motor fill your silo—its cheaper, easier, swifter. And this is just one of the many applications where G-E motors, controllers, and other electric equipment cut costs and labor.**

**Electric grain elevators, motorized grinders, huskers, and shredders will save four-fifths of the time you now spend on these jobs. G-E motors can economically pump your water, do your threshing, milk your cows, separate the cream, and sharpen your tools.**

**For farm households, G-E MAZDA lamps, refrigerators, fans, and cooking and heating appliances are economical labor savers.**

**If you are located on or near an electric power line, ask the power company for complete information concerning the possible uses of electricity on your farm.**

***Tune in on the General Electric Special Weekly Farm Program on WGY (Schenectady), KOA (Denver), KGO (Oakland). In addition, every Saturday evening at 8 P.M., Eastern Standard Time, the "General Electric Hour" is broadcast over a nation-wide N.B.C. Network.***

# GENERAL ELECTRIC

200-227D

# Electricity on the Farm

Vol. 2 SEPTEMBER, 1929 No. 9

**What First?**

There are many demands for the harvest money. So many, in fact, that it is frequently hard to decide just how it will be spent—after obligations have been met.

The ideal investment is one which gives the investor comfort, reduces his labor and at the same time makes or saves money for him. It is unanimously agreed that electric service for the farm meets all these requirements. But some of the particular uses of electric current are unable alone to make the grade.

Where electric service is made available to a farm, the first choice of all members of the farm household is electric lighting. But after that there are several applications which seem to stand in line for second place. Those farm women who have enjoyed the many advantages of the electric range very enthusiastically claim it to be second in line; others are equally certain that the water system, the washing machine and electric refrigerator are equally helpful.

All four of them reduce labor and in many instances actually save money for the farm household. It is only necessary to point out the experience of one farm housekeeper who was able to dispense with the hired girl as a result of putting in a water system, an electric range, and a washing machine. The money-saving feature of the electric refrigerator, through its preventing spoilage of foods, is quite well known.

Thus, after the farm home is wired, any of the four appliances mentioned might well be considered as next choice.

Around the farm buildings, electric lights stand first in usefulness. The second choice depends largely upon the type of farm; for example, whether it is predominantly a dairy farm, a chicken farm, or a general farm. In any case, the chore motor would rank well among the first. It serves so many uses, thus providing the foundation for increasing the number of power-driven machines, that it may well be considered a mechanical hired man. The water system is equally useful where water must be pumped for livestock.

At any rate, where it is desired to invest available harvest surplus in equipment which will answer the three requirements noted above for ideal investments, electrically-operated equipment provides one of the most fertile fields in which to make the selection.

# Refrigeration

## *For the Dairy Farm*

By BEN D. MOSES.
Division of Agricultural Engineering
University of California
Davis, Cal.

REFRIGERATION is becoming increasingly important on the dairy farm for cooling and storing milk and its products, and for the manufacture of ice. The problem is largely an economic one and selection of equipment is governed to considerable degree by the effect of its use upon net returns.

BEN D. MOSES

Ignorance on the part of the farmer of what a refrigerating machine can do or of the salesman on the adaptability of his machine to the conditions may result in the installation of either too small or too large a plant or in the poor arrangement of equipment.

One dairy recently coming under the writer's observation is producing 150 gallons of milk a day and has an investment of over $3,500 in a milk cooling and storing plant sufficiently large to handle 500 gallons of milk. The installation is suited to a large commercial dairy and the boxes would be a credit to a meat market or hotel, but it is not suited to a 50 or 60 cow dairy farm.

Another refrigerating machine was guaranteed to cool 200 gallons of milk a day but when installed had to run continuously in order to cool 130 gallons. It was also found that this company had installed the same size machine on 5 different dairies varying in production from 70 to 250 gallons a day.

When a dairyman is in the market to purchase cooling and refrigerating equipment, he should be able to supply the following information.

1. *How much milk will the refrigerating plant be called upon to cool a day?*
2. *To what temperature will the milk be cooled?*
3. *Will it be in cans or bottles?*
4. *How much milk will be stored each day?*
5. *What is the storage temperature required?*
6. *What kind of storage box will be used?*
7. *What is the probable milk room temperature?*
8. *What is the temperature of the cooling water?*
9. *How much ice is to be manufactured?*

With this information in hand, each salesman should be able to recommend the model and size of his machine best suited to the job.

The superiority of one refrigerant over another, of certain mechanical features, and special arrangement of parts, are all technical points that must be judged on their respective merits. The price, appearance, and workmanship as well as the manufacturer's reputation for maintaining service, are factors that should influence the farmer in making his selection. The most important question to definitely settle, however, is that of size. How big must the brine tank be, and how large the compressor? If either is too large or too small, operating costs will be high. The average power consumed and the time the compressor runs are good indicators of their

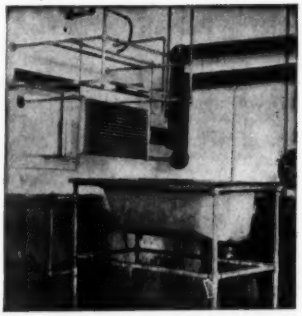
performance. The compressor should run about 15 hours a day and the power consumption should not be over two-tenths of a kilowatt hour for each gallon of milk cooled 35 or 40 degrees Fahrenheit.

Where the wet system is used for cooling milk, the milk can be placed in the tank soon after being drawn from the cow at a temperature of about 90 degrees Fahrenheit or it can first be passed over an aerator and precooled to any temperature desired, by circulating either well water, brine, or both through the aerator. The wet system is best adapted to the smaller dairies. The principal advantages are:

(a) *The first cost is low.*
(b) *The tank is easy to build and install.*
(c) *There is a constant supply of cold brine, it stores refrigration.*
(d) *It is a simple matter to manufacture small quantities of ice.*

The chief disadvantages are:

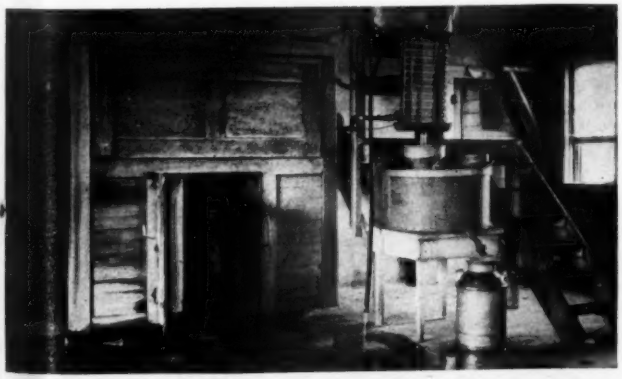
(a) *It is limited in its use to cans.*
(b) *Has no dry storage space.*
(c) *It is inclined to be mussy, and unsanitary.*
(d) *The cans have to be lifted into and out of the brine. (Side openings are not possible.)*



**Milk cooler and storage, brine system. Note the milk vat made of a porcelain bath tub.**

(e) *Cooling is slow unless an aerator is used.*

In the "dry" system, the milk is cooled on an aerator and then either shipped or placed in a dry cold storage box. The aerator can be cooled by passing water through the upper tubes and brine through the lower, or by using the tubes or part of them as an evaporator of a direct expansion system. Approximately six inches in length of tubular aerator for each ten gallons of milk per hour has been



**A "non-walk-in" type of box. Note conservation of storage space, and general compactment of whole unit.**

found to be good practice. Where water is available for circulating through the aerator the refrigerating machine can be relieved of considerable of its cooling load. A flow of approximately one gallon of water per minute will satisfactorily lower the temperature of ten gallons of milk per hour. The flow of the brine or the expansion valve adjustment on the aerator must be so regulated as to cool the milk to approximately forty degrees without freezing it on any of the cooler surfaces. The brine for cooling the aerator should be circulated with a centrifugal type pump so that the quantity can be varied by throttling the discharge or suction. The running parts should be of brass or some metal resisting the corrosive effect of brine. A three-quarter inch pump driven by a quarter horsepower electric motor is large enough for any quantity of milk up to 400 gallons a day.

Satisfactory operation of milk cooling plants depends more upon the correct selection of the refrigerating machine than of any of the other units. They are rated on their ability to replace ice and at the present time are made in ⅛, ¼, ⅜, ½, ¾, 1, 1½, and 2 ton sizes. The table on page 38 gives the range of machine sizes for different quantities of milk.

Where milk is cooled by the brine system and not stored, it will require between 5 and 6 pounds of refrigeration capacity (in terms of melting ice) for each gallon of milk cooled a day; with the direct

**USEFUL INFORMATION**

| | |
|---|---|
| Specific heat of milk | .9 |
| Cold storage temperature of milk | 35°F. |
| Weight of milk a gallon | 8.6 pounds |
| Heat removed in cooling one gallon of milk 1°F. | 7.74 B.T.U. |
| Milk temperature as it comes from the cow. | 98°F. |
| Length of aerator per 10 gallons of milk per hour | 6 inches |
| Water required for aerator | 1 gallon per minute for each 10 gallons of milk per hour. |
| Approximate capacity of refrigerator in equivalent ice for each gallon of milk cooled and stored a day using the brine system | 5 to 6 pounds |
| Approximate capacity of refrigerator in equivalent ice for each gallon of milk cooled and stored a day using the direct expansion system | 7 to 9 pounds |
| Ratio of quantity of brine to quantity of milk cooled a day | 1.5 to 1 |
| Strength of brine—NaCl | 20-25 per cent. |
| CaCl | 15-20 per cent. |
| Insulation for storage box or brine tank—equivalent of sheet cork | 3 to 4 inches |
| Floor space in cold storage room per can | 15 x 15 inches |
| Floor space in cold storage room per stack of crates | 18 x 20 inches |
| Desirable operating time of refrigerating machine | 15 hours |
| Approximate energy used per gallon of milk cooled and stored a day | .1 to .2 KWH |

Walk-in type of storage box with tank suspended from ceiling. Note the drawer for making ice.

expansion system 7 to 9 pounds. If the milk is to be stored, this demand will be increased about 10%.

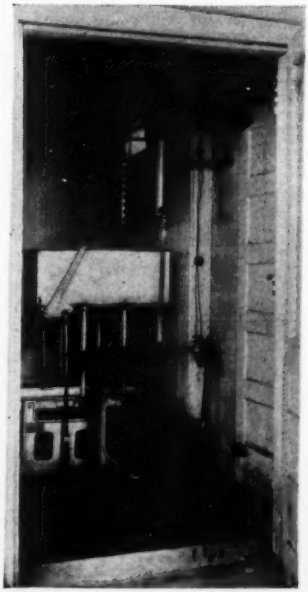
A 20% to 25% solution, by weight, of sodium chloride or a 15% to 20% solution of calcium chloride will produce a brine with a freezing point lower than 10 degrees Fahrenheit.

If the brine tank is used without a cold storage box, it should be covered with a material having insulation value equivalent to that of 3 inches or 4 inches of sheet cork.

Too small a quantity of brine will result in insufficient storage of refrigeration and consequent poor cooling of the milk, too large a quantity will occupy unnecessary space and increase heat losses as well as construction costs. A weak solution may result in freezing of the brine or of unsatisfactory cooling.

If the "walk in" type of box is used it should be so designed as to have a minimum of waste space, should be insulated on all sides with material having the equivalent value of 3 inches or 4 inches of sheet cork; should be provided with a well made tight fitting door and have a floor sloped so as to facilitate cleaning. The greatest care should be used to waterproof all surfaces and joints and protect the insulation against moisture. Frosting in the cracks is harmful to the wall material. The space should be ample to store all the containers to be placed in the box at one time. Cans and crates vary a little in size, but a 15 inch by 15 inch allowance for cans and 18 inch by 20 inch allowance for crates of bottled milk will be found to meet the usual requirement. The brine tank should be placed in such a position as to

(*Continued on page 37*)



Milk cooler, storage box and bottler on a 25 cow retail dairy farm in California.

# *The Installation of*
# Farm Feed Mills

By E. R. MEACHAM

PRACTICALLY all farmers who feed live stock use ground grain somewhere in the rations. They generally raise much of this grain right on the farms where it is fed, but most of them must haul the crop to the custom mill, have it ground, and then haul it back to the farm again before it is ready for feeding.

Such a program makes their grinding cost them a considerable sum for the time and labor of hauling, in addition to a cash outlay of from two to three dollars a ton.

Years ago farmers began trying to get around some of this expense and labor by grinding at home. First it was with outdoor sweep mills run by horsepower. Then with the advent of the gas engine, it was in small burr mills, and later, when the tractor became common in larger mills.

But many farmers are not entirely satisfied with this method of grinding. Much of the work has to be done throughout the winter when it may be neither pleasant nor convenient to get the tractor started for a few hours operation. Nor is it always practical to grind a large amount at one time, for there is a feeling, possibly not substantiated by experimental evidence, that freshly ground grain is more palatable to live stock and therefore more valuable for them.

It is certain that under some conditions ground feed spoils very quickly. This is especially true of new corn. The shelled corn recovered in shredding is

**Fig. 1. An Overhead Installation in a Feed Alley.**

very apt to heat,—and the tendency is much increased by grinding.

As soon as electric power lines reached out into the country a few farmers here and there began to rig up their own devices for grinding with a motor. This wide spread interest in feed grinding in Wisconsin made it one of the early jobs of the Wisconsin Experimental Electric Project. Out of a dozen different mills brought into the laboratory for study and trial, Professor Duffee and I selected the most promising one for a farm trial. It was the first mill installed on the Wisconsin Experimental Electric line at Ripon.

### Some Troubles Develop.

When we set it up on a solid pedestal, belted it to a two-horse motor, arranged a chute for the grain bins above, and an adjustable spout to deliver the meal into a bin or directly into a sack, we thought we had taken a long step toward making farm grinding a manless job.

Two troubles developed. We could not get a steady automatic feed. The grain would either bridge over in the hopper and allow the burrs to run together, or the mill would choke up and throw off the belt, allowing the motor to run idle. The burrs were only 4" in diameter, and they had an effective grinding surface only about ½" wide around the edge. This made the grinding extremely slow, and the wearing of the burrs very rapid.

The second burr mill studied under farm conditions was installed in a one-story granary some distance from the barn where the grain was fed and no attempt was made to operate it without constant attention. It did have the effect, however, of making feed grinding the regular routine job of a 12-year-old boy.

Nails, nuts and other iron in the grain dulled the burrs. This difficulty and the expense of renewing them turned our attention to hammer mills. Fig. 1 is the first hammer mill installed on the Wisconsin Project. The picture is taken from the central feed alley of the barn. The five horsepower motor is mounted on top of a concrete water tank, and the mill itself is bolted to

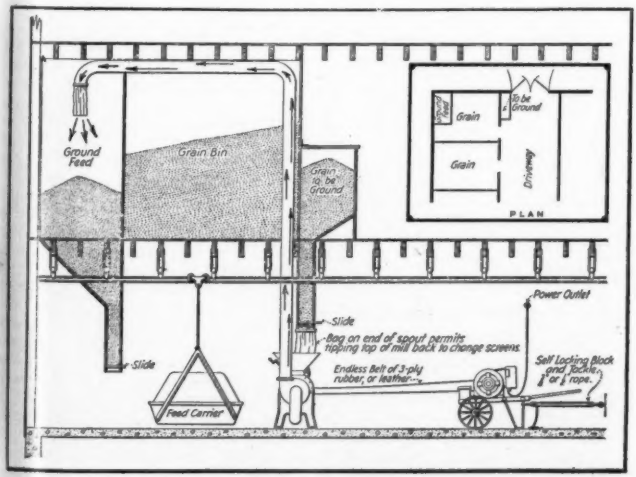



**Fig. 4. Diagram of Bin Arrangement.**

heavy timbers laid across the concrete partitions of a stall. The belt does not obstruct the cross alley because it is higher than a man's head. At threshing time Mr. Tabbert drives the loads of grain into the barn driveway overhead, and shovels it into storage bins. From there it passes down a short metal spout directly into the hopper of the mill. The meal drops into the space below the mill which is boxed in tight to retain the dust. This arrangement has given perfect satisfaction from the beginning.

### A Common Mistake.

The most common mistake in planning the installation of these mills is a failure to appreciate the high speed at which they must run, and the consequent necessity for firm anchoring. Unless some unusually rigid support is provided the installation will not be satisfactory. Excessive vibration of the mill running at 3,300 to 4,000 R.P.M. injures the machine itself and the bearings of the motor that drives it. Moreover it is impossible to transmit the motor's full power and to maintain a steady speed if the mill is shaking around.

Another factor in the successful operation of the mill itself is the selection of the proper belt. The mill pulley is necessarily very small. It affords a limited contact with the belt, which is running at a speed of about 3,600 feet a minute. To hug the pulley closely and stay in place it should be thin, very pliable, and preferably endless. Ordinary joints and lacing will cause very undesirable pounding at this speed.

### Relation Between Speed and Efficiency.

There seems to be a very general lack of definite information regarding the relations that may exist between the speed of the mill, its efficiency, its capacity, the power required to drive it, and the fineness of grinding. Whatever may be the theoretical relations, our observation is that these mills do not give their owners satisfaction unless they are driven over 3,000 R.P.M., and preferably at 4,000 R.P.M.

With the pulley sizes now commonly supplied on these mills, this will require an 8" to 9" pulley on the ordinary 1,800 R.P.M. motor. It is absolutely useless to expect success from the standard pulleys regularly furnished with 5 h.p. motors.

The most obvious method of using these mills is to try to fit them into the already established practices of handling the grain. But to avoid a labor item comparable to the cost of grinding at the custom mill, very definite plans must be made to bring the grain from the storage bins to the mill, grind it and deliver it at the point of feeding with no labor and very little attention.

To do this the grain storage should be in or very near the barn where the greatest amount of ground feed is used. Gravity will, of course, bring the grain from overhead bins, and the blower is an excellent way of transporting the meal, as it can be easily used under a very wide variety of conditions where other elevators would be entirely impractical. No figures are available to show just how much power the blower itself takes, but observation of mills with and without blowers, indicates that those equipped with the blower grind fully as fast as those without.

This is probably because the power absorbed by the fan is somewhat balanced by the help it gives in drawing the meal through the screen.

Fig. 2 was taken under a granary built on a side hill, and having a space for machinery underneath. Here Mr. Capener mounted his mill on an adequate concrete footing. He drives it with a portable 5 h.p. motor. To the bottom of each of three storage bins, he attached a short square wooden spout with a slide. The local tinner made him three funnels, some sections of

4" pipe, and three adjustable elbows. These convey the grain from the bin spouts to the mill hopper. Thus he can grind from any one bin or from any combination of the three without changing his set-up.

But he found that he could not regulate the proportions of a mixture of grain by means of the slides in the square wooden spouts. If he opened a slide enough for the grain to run at all, it filled the pipe and seemed to feed into the hopper as fast as from another pipe whose slide was opened wide. This gave a 50-50 mixture instead of the ¾ oats and ¼ barley that he wanted. So he had a reducer or nozzle made for the end of his barley spout and now it delivers only 1/3 as much as the oats spout. To vary the proportions he must provide additional nozzles. The blower pipe shown extends to the top of the granary where he is building meal bins having very steep sloping bottoms. From these bins the meal is to be spouted into sacks or directly into a wagon or truck backed up to the door. This farmer feeds a number of sheep and hogs as well as dairy cattle so this location is probably as convenient for him as an installation in the barn.

The few farms whose grain storage arrangements already in-

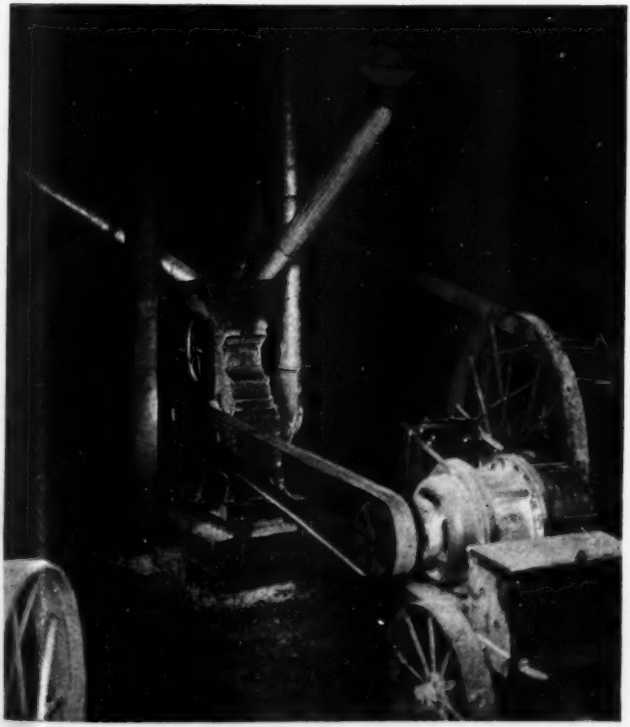


**Fig. 2. A Good Installation Under a Granary.**

clude a built-in elevator are admirably adapted to home grinding. In addition to the bins in which the grain is regularly stored when purchased or threshed, a smaller magazine hopper is placed over the grinder. No extra labor is required to fill it. The desired grain, or combination of grains is spouted down into the elevator pit and elevated into this small bin from which it feeds directly into the mill. On the Noyes farm near Beaver Dam, Wisconsin, the motor that elevates the grain also drives the mill. (Fig. 3). In fact, while the hopper is being filled both operations can go on at once. Then the belt to the line shaft is run off the motor pulley and the grinding goes on alone.

The product of this mill is fed at more than one point on this farm and also on an adjoining farm. It is therefore conveyed to bins on the same floor. Mill feeds are mixed with the meal on the floor in front of these bins, and the mixture for the dairy herd is shovelled into a big wooden funnel set in the floor. In the feed alley below, the feed carrier receives its load direct from this funnel which should be large enough to hold the mixture for one feeding.

Where most of the grain is to be fed in the barn, the feed alley itself is an excellent location for the mill. A portable motor is easily rolled in on the concrete floor.

### Lining Up the Belt.

To secure perfect belt alignment, one farmer cut two shallow channels with vertical sides in the concrete floor. They are spaced as far apart as the wheels of the truck and each channel is as wide as the steel tire. When he rolls the wheels of the truck into these two channels the motor pulley is exactly in line with the pulley on the mill and the pull of the belt cannot twist the motor around. The channels are long enough to allow for any changes in the length of the belt. Fig. 4 is a diagram of this installation. At threshing time they drive the grain wagons up onto the haymow floor and fill the bins there. In this case the grain or mixture to be ground must be shoveled from storage into the smaller reservoir. Then it goes down into the mill, up into the ground feed bin, drops back into the feed carrier from which it is shovelled directly into the mangers. Such an arrangement puts industrial efficiency into an important farm operation.

The rigid portion of the grain spout ends high enough above the mill so that the top can be tipped back when it is necessary to change the screens. The lower part, in this case, is a grain sack with the bottom ripped open. This extends low enough so that the grain will block the spout before it overflows the hopper. It is entirely satisfactory where the grain spout is practically vertical, but if the spout reaches the mill at a rather flat slope, the vibration and the weight of the grain are apt to pull such a cloth tube out of the hopper and let it discharge on the floor. A moveable section of wooden or metal spouting is better for such locations.

Even if the grain storage space is not above the stable, the feed alley may be an excellent place for a grinder. A narrow deep hopper can be built above the mill and filled through an opening in the floor above.

Space may be saved in the feed room and all troubles with belts may be avoided by running the mill direct connected to a 3,600 R.P.M. motor. The Public Service Company of Northern Illinois has an excellent installation at its model farm near Mundelein (Fig. 5).

There are three large overhead bins for grain storage and four small ones to receive ground feed. A built-in elevator operated by a separate motor serves all seven of these bins. Over the hopper of the elevator boot there is a small door through which grain may be shovelled from a wagon or truck outside for delivery into

(*Continued on page* 44)

# *Removing Spray Residue by* Washing Fruit

By C. E. SEITZ

WASHING fruit for spray residue removal is now almost universally adopted in preference to other methods. Approximately 85% of the apples and pears harvested in the Pacific Northwest last season were washed. In sections of the country where heavy applications of arsenic is made for the control of the coddling moth, a considerable residue of arsenic remains on the fruit at harvest time. While it is difficult to find any authentic cases of illness resulting from eating fruit carrying this residue, health officials say that even small amounts may be injurious and that the lead used in combination with the arsenic may be even more dangerous.

In 1925 some American fruit was received on the English market having considerable residue of arsenic. The English Health authorities immediately threatened an embargo on all American fruit. This furnished the incentive for the enforcement of strict regulations by United States authorities. Beginning with the 1926 crop an attempt was made to have all American fruit comply with the International tolerance of .01 grains of arsenious oxide to one pound of fruit. However, the difficulties connected with satisfactory removal of residue at that time were such that it was found impractical to enforce such rigid requirements. Since 1926 machines have been developed that will satisfatorily remove the residue at comparatively small cost and beginning with the 1929 season the maximum of arsenious oxide allowed will be .01 of a grain to the pound of fruit, or the same as is permitted in Great Britain.

**Eastern Growers Wash Fruit.**

The enforcement of these regulations are more than likely to bring the fruit of the Eastern sections of the country within the danger zone and force the general adoption of washing equipment. In fact some Eastern growers are already washing their fruit with splendid results. The fact that the western grower is placing a washed fruit on the market will in itself tend to force the Eastern grower to do likewise in order to meet competition. Washing of fruit is comparatively simple and can be done in homemade vats, or tanks, although the most satisfactory results are obtained by using machines especially designed for the

**Electrically operated washer at the far end of the sizer in a modern fruit packing plant. The fruit goes through this washer where it is thoroughly cleaned and dried and then delivered direct to the sizing table.**

purpose. A number of machines are now on the market that meet the needs of the small grower, as well as the large grower and the community packing establishments. Most of these machines are giving satisfaction.

In 1927 I made a trip through the Pacific West and talked to a number of growers who were then using washing equipment. Even at that time when the machines were not perfected to the point they are today, the growers I visited were well satisfied with the results they were securing. While I was visiting a large California grower, at the time he was washing his pears, he said, "I am so well satisfied with the results secured from washing my fruit that if the spray residue restrictions were withdrawn, and the compulsion of washing fruit removed I would continue to wash my fruit because of the improved appearance and the better prices received."

### Hydrochloric Acid Generally Used.

A number of cleansing agents have been tried out, but dilute hydrochloric acid is the agent now most generally used. The commercial grade of hydrochloric acid testing 20 degrees Baume is commonly used in the proportions of from five to seven quarts to the 100 gallons of water. It is sometimes necessary late in the season to increase the amount of acid to as much as three gallons to the 100 gallons of water. The solution should be changed after treatment of about 1,000 bushels of fruit per 100 gallons of solution. The acid tank should also be cleaned completely at the end of each day's run so as to prevent contamination from decay organisms and possible injury from the accumulation of soluble arsenic in the tank.

There are several different types of machines on the market, each applying the washing solution to the fruit in a different way. In one type the fruit is sprayed with the washing solution by diffused jets as it passes through the spray chamber. From the spray chamber it passes into another chamber of clean rinsing water and is then dried by forced air drafts. In another type the fruit is floated directly through the machine on the surface of the solution and dipped or emersed slightly by means of revolving paddles. Still another type floats the fruit directly through the solution at the same time spraying the fruit from nozzles and drying later. Other types are also used, each type having certain advantages. Satisfactory washing or cleaning may be accomplished in any of the types, both home-made as well as commercially manufactured, so that any grower, no matter how small his operations, may now satisfactorily clean his fruit.

### Better Results with Warm Solution.

In tests conducted in Washington State it was found that when the washing solution was heated to a temperature of 95 degrees to 98 degrees F. a significant increase in cleaning efficiency was obtained as compared with a temperature of 48 to 70 degrees F. It was also found that increasing the acid strength beyond about .3 per cent, by weight, added but little to the increased cleaning efficiency obtained in a heated solution. For the efficient cleaning of the waxy varieties such as Winesaps and Arkansas Blacks, best results have been secured when the temperature of the cleaning solution was close to 100 degrees F. In addition to the arsenic, residues of lime, copper, lead and other spray material is removed without any detrimental effects to the keeping qualities of the fruit. The fruit should always be washed as soon after picking as possible for the best results.

Thorough rinsing with clean water following the acid treatment is an essential part of the washing process. This rinsing is necessary in order that all traces of the acid be removed to prevent impairment of the keeping qualities of the fruit. Ordinarily two to three gallons of fresh water should be used for each bushel of fruit treated. The rinsing water should be thoroughly agitated to insure proper

(*Continued on page* 34)

# ELECTRICAL HOUSEKEEPING

Conducted by GAIL MEREDITH

## Changing a Fuse

IN the twelve years I've been keeping house, we have only had to change a fuse twice,—but both of those times, I was very glad we could do it ourselves and did not have to wait for a service man from the electric company to drive out half a dozen miles and do it for us.

One time was around the Christmas holidays when we were having a waffle party. Of course we had all of the lights on, and we got the waffle irons going all right, but the minute we plugged the coffee percolator in too those lights went out.

We changed the fuse and made the coffee from a convenience outlet in the kitchen, but I did not understand why we had to, until I began to know something about electricity itself. I do not mean that I have learned what it is. Nobody knows that. I just mean some of its habits.

### Why the Current Stops Flowing.

First of all, it is forever trying to get back to its source by the shortest, most easily available wire pathway it can find. Next, it will not flow out at all unless the path leads back unbroken to the source. It lights lamps, runs motors, and heats ranges only because we have made the wiring in those things part of the path it must travel. If the path is cut off anywhere through accident or as we turn a switch, no current flows.

The wires inside our houses are connected with the wires that carry electricity out from the power house and make a part of that complete path for the current. They are very much smaller and lighter than transmission wires, because we use such comparatively small amounts of current for our households. The connection is made through a fuse in the main entrance switch which is large enough to carry the total load that may be expected. This fuse should not be tampered with.

Within the building itself the wiring system is divided up into separate circuits, each one carrying part of the household load. Each of these circuits has a smaller fuse of its own.

A fuse is just a short strip of metal ordinarily enclosed in a little plug that screws into a recess like a lamp socket,—one of that double

**Standing on Dry Wood, Pull the Main Switch**

row of sockets in a metal box somewhere in your back hall or down in the basement. When it is in place, one end of the metal connects with the main line; the other, the branch circuit leading off from it. It completes the metallic path that forms each circuit.

The fuse is the watch dog for our wiring. We cannot hear its bark, but it bites off the electricity quick as a wink if we try to draw more current over the wires than they are designed to bear. Its action is simple enough. That little strip of metal is designed to carry an exactly specified amount of current. If more than that comes over the wires it burns the strip up clean as a whistle, breaks the path, and stops the flow of current.

The sudden increase in current flowing may have come from some circuit in the wiring or an appliance. If it has, the fuse will blow again when the appliance is connected,—and, of course, the appliance must be repaired before it can be used. It may come from starting a motor under too heavy a load. It may come from an overload caused by using too many lights and appliances on the same circuit.

**Easy to Replace.**

Replacing the fuse yourself is a very simple matter and prevents inconvenience and delay. It is a perfectly safe operation; you have only to follow directions exactly and in the order they are given. Only never try to do it in the dark; use a flash light or a lantern to see your way. And before you begin, get some dry wood, a box or chair, to stand on.

(1) Standing on this box, pull the main switch that cuts off all the electricity in the house.

(2) Take out the burned fuse. Use one hand only. Always keep the other hand free. Never put your fingers into the fuse sockets or clips.

(3) Put in a standard fuse of same capacity.

(4) Close main switch.

That is all there is to it.

## Oven Canning

If you have an automatic temperature control on your range, if you can turn a little wheel or press a little lever and keep the temperature of your oven just where you want it, you can do your canning in that oven this fall.

The company that made your stove undoubtedly sent you a canning schedule with your cook book, or the recipe sheets and information service that come to you now and again. It tells you how long various fruits or vegetables should be cooked, and what the oven temperature should be.

There does not seem to be a great deal of variation in these schedules, but I have found some manufacturers recommending setting the oven at 250 degrees and some at 275 degrees. The latter seems the more common practice. Miss Dorothy Shank who has probably done more work in the study of oven canning than anyone else, recommends that temperature.

If you live very high above sea level, you would be wise to ask your state college for the time and

(*Continued on page* 36)

I Pour the Hot Syrup over the Plums

## OVEN CANNING CHART

**Pre-heat oven to 325 degress with both units on high, then turn top off and leave bottom on high, turning regulator to 275 degrees. Process at 275 degrees.**

| PRODUCT | PREPARATION | METHOD | PERIOD PROCESS |
|---|---|---|---|
| **Berries** | | | |
| Blackberries<br>Blueberries<br>Cherries<br>Currants<br>Dewberries<br>Gooseberries<br>Raspberries<br>Strawberries | Grade, wash and stem. | Place new rubber in position, pack berries in hot sterilized jars and fill jar to within 1" of top with hot syrup. Partly seal and place immediately in shallow pan in pre-heated oven. | 35 min. |
| **Whole Fruits** | | | |
| Apricots<br>Peaches<br>Pears<br>Pineapples<br>Plums<br>Rhubarb | Wash, halve, remove pits.<br>Scald and peel.<br>Pare and core.<br>Pare, slice and core.<br>Wash and prick skin.<br>Wash, cut in 1" lengths. | Place rubber in position. Pack fruit in hot sterilized jars. Fill jar to within 1" of top with hot syrup and partly seal. Place jars in shallow pan in pre-heated oven. | 40 min. |
| **Vegetables** | | | |
| Asparagus<br>Carrots<br>Lima Beans<br>Peas<br>Spinach<br>String Beans | Wash. Prepare vegetables in usual way. Pre-cook 5 min. in boiling water. Drain. | Place rubber in position. Pack vegetables in hot sterilized jars. Fill with boiling water to within 1" of top and add one teaspoon salt. Partly seal and place jars in shallow pan in pre-heated oven. | 2½ hrs.<br>2½ hrs.<br>3 hrs.<br>3 hrs.<br>2½ hrs. |
| Beets | Scrub. Cook 15 min. in boiling water. Cold dip, remove skin. | Same as above..... | 2½ hrs. |
| Corn | Cook ears in boiling water 5 min. Remove and cut from cob. | Same as above..... | 3 hrs. |
| Tomatoes | Scald in boiling water 3 min. Cold dip and peel. | Same as above..... | 45 min. |
| Squash | Wash, halve and bake at 400 degrees about 1 hour or until soft. Remove pulp from shell. | Pack in hot jars. Add 1 teaspoon salt. Squash does not require addition of boiling water. | 3 hrs. |

# Let There Be Light

By J. W. D. CHESNEY, M.D., Ph.D.

THE good Book tells us, "In the beginning God created heaven and earth and the world was without form and void. God said, 'Let there be light, and there was light.'" Thus the beneficent Creator made sunlight before any living creature was made, and thus sentenced all of His creatures and creations to sunlight forever.

Dr. J. W. D. Chesney

Early in his existence man noted that his health was much better in the summer than in winter. and consequently became a sun worshiper. Long before Christ, Aesculapias, the great Greek physician, was employing sunlight in the prevention and cure of diseases with most remarkable results. Pliny, the great Roman historian, about the time of Christ, wrote, "The sun is the greatest of all medicines."

About 1890 a great French physician, Rollier, conceived the idea of conveying tuberculous patients to the upper regions of the Alps, above the line of clouds and filth and so-called civilization, stripping them practically nude and exposing them to clear, mountain sunshine. He proved that sunlight, when uncontaminated, was the most powerful medicine that the human race will ever know. Rollier and his "Alpine schools" have cured literally hundreds of thousands of previously incurable cases of tuberculosis.

Neils Finsen, a Dane, attempted to carry on the same work in Denmark, but as Denmark is a low, foggy country, he was unable to obtain sufficient sunlight to be of any value. Knowing that the carbon arc lamp (the artificial sunlight) had almost the same bands of energy as natural sunlight, he began to experiment with high-powered carbon arc lamps and was able to accomplish in Denmark with artificial sunlight all of the good that had been accomplished by Rollier with natural sunlight. The Finsen Institute at Copenhagen has cured hundreds of thousands of victims of rickets, tuberculosis and other diseases who were formerly doomed to an early and inevitable death.

The Finsen lamp was a very costly piece of apparatus and not applicable to use by other than scientific minds. American scientists took up the subject and have reduced the artificial sunshine lamp to greater simplicity and lower cost.

### What Is Sunshine?

Looking at the sun, the average person sees only a white light, but Science has developed an instrument called the "Heliospectroscope" which when pointed to the sun breaks it up into its component parts and tells just what metals are being consumed in the sun to produce sunlight. The rainbow is an example of Nature's spectro-helioscope in that it breaks the white light into its component parts, part of which we see and recognize as violet, indigo, blue,

(*Continued on page 50*)

**Photograph showing relation between ultra violet light received from three sources.**

# Water By Wire

J. P. SCHAENZER
College of Agriculture,
University of Wisconsin

WHEN installing a water supply system, one should plan for service and permanency, as water is essential for our daily life. An automatic installation is not only a tremendous saving of labor to the farmer in watering the stock, but will save many hours, in fact days, of drudgery during the year for the housewife. Thus it will be possible to use this time to better advantage, such as leisure, reading or recreation, and thereby help make the farm a more pleasant place to live.

A pump capacity of 200 to 400 gallons per hour will meet most farm conditions. Pressure tanks for hydro-pneumatic systems are commonly furnished in sizes of 40 gallons and larger. A tank of 120 gallon capacity is ample for ordinary conditions. Where the system is automatic, it is not necessary to have a tank of larger capacity. A small tank will be refilled oftener and consequently the water will not get as stale or warm in hot weather. A galvanized tank is preferred as the water will be better for drinking purposes.

A combination hydro-pneumatic and gravity system is one of the most ideal for farm water supply. The hydro-pneumatic tank is to be used for the house and the gravity tank for the barn water supply. The operation of the system consists of pumping water into the bottom of the pressure tank, thus trapping and compressing the air contained in the tank. This compressed air supplies the necessary pressure to force the water throughout the system.

### Essential Parts of System.

The principal parts of this system are:

1. A good force pump and brass cylinder. A good brass cylinder should be installed as this is the heart of the system.
2. An electrically driven jack or other source of power. The motor, jack and pump are usually constructed as a unit.
3. A steel pressure tank tested to withstand a pressure of about 100 pounds per square inch. This is usually placed in the basement of the house.
4. An air dome; a good quality disc check valve; a water relief or safety valve; an air compressor attachment; and an automatic electric pressure switch.

Truck used by the University of Wisconsin in their 1929 state-wide water supply and sewage disposal campaign. Note diagram of complete water supply system on side of truck.

5. A gravity storage tank in the hay mow or other convenient place, and located directly above the drinking cup supply line.

6. A shut off valve is placed in the main pipe line just inside the barn coming from the pressure tank. It is opened to fill the gravity tank. A valve just below the tank is desirable which can be closed if the tank springs a leak or in the summer time on account of the water becoming stale. In this case the valve in the main line is opened so that the various faucets and drinking cups in the barn will be supplied directly from the pressure tank. A float valve may be placed in the tank to regulate the flow of water automatically.

7. Necessary pipe and fittings.

The advantages of the system are:

1. It supplies excellent pressure throughout all the farm buildings, furnishing an automatic supply of water for the farm equal to city water service.

2. It supplies pressure for a hose and gives a limited amount of fire protection.

3. A compartively small and inexpensive storage tank of 40 gallons or larger is satisfactory with an automatic electric system. A 120-gallon tank is recommended.

4. The tank can be conveniently located in the well pit, or basement, and in either of these locations the water keeps fresh, and will not freeze.

5. This system is not as expensive to purchase or operate as the air power system and only a trifle if any more expensive than a gravity system.

6. The gravity storage tank gives cheap storage for a fairly large amount of water. This is an insurance against interruptions of the electric service or pump trouble.

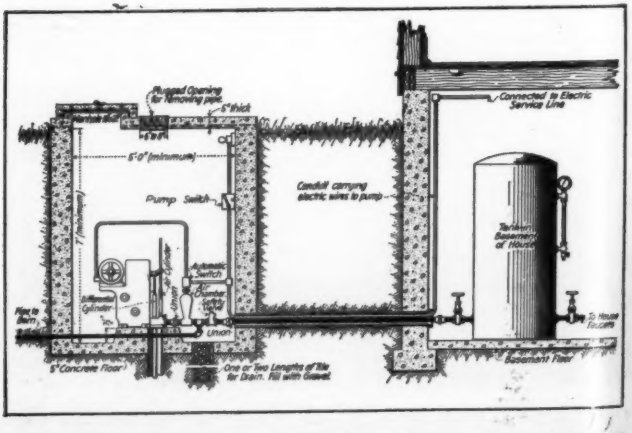
7. The gravity tank gives low pressure in the barn. Many drinking cups will squirt badly under the higher pressure of a pressure tank. They will also be more apt to leak.

## The Disadvantages Are:

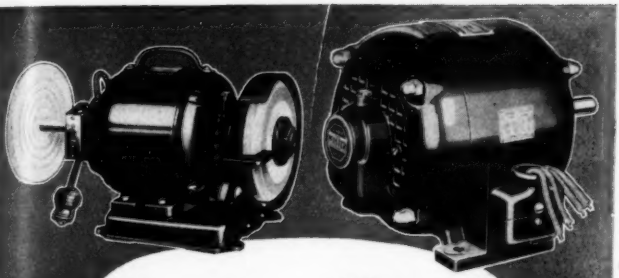
1. If for some special reason a larger storage capacity is necessary in the house, a large hydro-pneumatic tank will be very expensive.

2. The cost of electric energy will be slightly greater for a hydro-pneumatic than for a gravity system due to pumping against a greater pressure. This difference, however, is small as the total cost of pumping water is small.

The hydro-pneumatic system must be equipped with some device for replenishing the air in the pressure tank. When the automatic switch stops the pump at a pressure of approximately 40 pounds, the tank should be about 2-3 full of water and the upper 1-3 filled with compressed air. It is




**An automatic electric hydro-pneumatic water system for a deep well.**



# Here's *Real* Farm Relief

THE newspapers and magazines these days are full of talk about "Farm Relief." It is all rather intangible and, possibly, is a good while in the future.

With a Master Motor Grinder you can sharpen your axe, sickle knife, corn knife, scythe, and many other farm tools, quickly and easily.

And—with the Master Portable Motor you can free yourself of the drudgery of filling silos, cutting wood and many other hard farm tasks.

This is real "Farm Relief" that you can have immediately and at small cost. Write us for information.

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STOCKS CARRIED IN PRINCIPAL CITIES
*More Than 70 Service Stations*
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the expansion of this air which forces the water out through the system. The automatic switch is usually set to start the pump again at about 20 pounds pressure. At this time the tank is about 1-3 full of water; thus the so-called working capacity of the tank is about 1-3 of its total capacity.

The air in the tank will be absorbed by the water and drawn out with it. This necessitates equipping the system with an air pump to maintain the required amount of air in the pressure tank. It is also important that branch line connections between the pump and pressure tank leave at the bottom of the pipe, to avoid entrapping the air and blowing it out at the faucets.

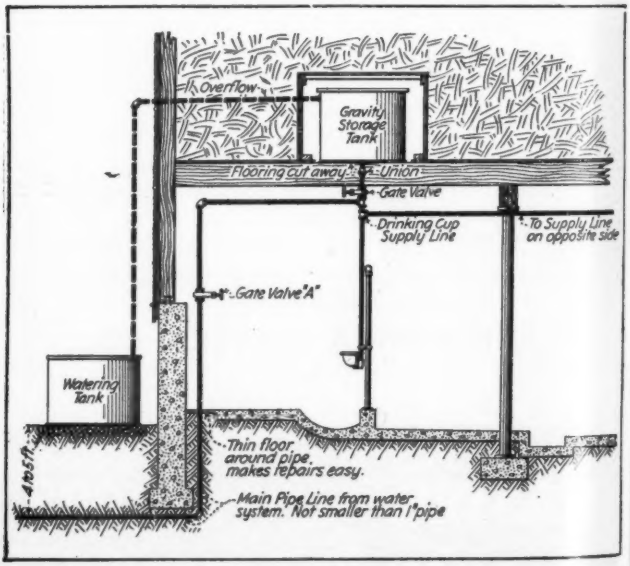
**Two Types of Pumps:**

Water pumps are divided into two general types known as shallow and deep well. The former draw the water from the well by suction, but should not be located more than 22 feet above the level of the water. A shallow well pump need not be located directly over the well.

The deep well pump has a cylinder located deep in the well and preferably below the surface of the water so that it cannot lose its prime. A two to three-inch cylinder should be adequate for ordinary farm conditions. The length of stroke is usually 7 inches and the number of strokes 35 per minute. An ash pump rod with galvanized metal connections has the advantage in being lighter, more durable and quieter in operation than a steel rod.

The most ideal location for the pump jack and pump is in a well pit. This location saves the cost of a frost proof length and insures that everything will be underground so that it will not freeze. The electric motor will operate

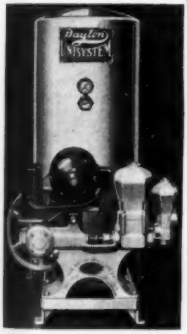
(*Continued on page* 38)


Overflow
Gravity Storage Tank
Flooring cut away
Union
Gate Valve
Drinking Cup Supply Line
To Supply Line on opposite side
1" Gate Valve "A"
Watering Tank
Thin floor around pipe, makes repairs easy.
Main Pipe Line from water system. Not smaller than 1" pipe
4 to 5 ft.

**Gravity system for the barn. Ordinary galvanized stock or wooden tank may be used. The gate valves as shown are especially desirable.**

# PREPARE FOR THE COLD MONTHS AHEAD

## *Install a DAYTON Water System Now*

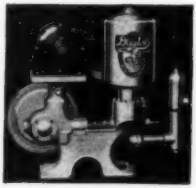



DAYTON 35 Unisystem—One of several sizes and capacities. Priced from $115 up, f. o. b. Dayton, O.

THEN, when winter comes, you will not have to freeze your feet thawing out the old hand pump, or break your back carrying water from it. With a DAYTON electrically operated Water System, just turn on a faucet and you have running water under pressure at your command.

Mail the coupon below for further interesting details.

The DAYTON Cub—Shallow well direct pressure system. Capacity 225 gallons per hour. $65 f. o. b. Dayton, O.



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THE DAYTON PUMP & MFG. CO., E.F.9
Dayton, Ohio.

Gentlemen: Send me further details regarding DAYTON Water Systems, without obligation.

Name.....

Address.....

Dayton WATER Systems

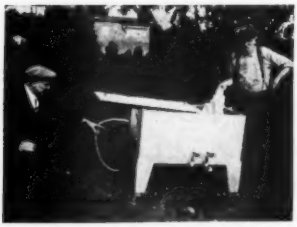
MAKE THE *WATER* DO THE RUNNING

# Getting the Chickens in Hot Water

By J. C. SCOTT

WHEN Mr. G. George, poultryman, living north of Seattle, started hunting for an electric chicken scalder, there was nothing to suit his needs on the market, so an electric scalder was devised and made up for him. He is very enthusiastic about this new machine.

"The first day we had this



**Electric Chicken Scalder Ready for Operation.**

scalder in operation," said Mr. George recently, "we got a rush order from one of the road-houses at 3 o'clock in the morning. As the water is always hot, we were able to scald and pick the birds and make immediate delivery."

### Helpful to Poultrymen Selling Dressed Birds.

The electric chicken scalder is particularly adapted to the needs of poultrymen who sell dressed birds to roadhouses, restaurants and the markets. Since the machine is well insulated and has a thermostat, the water is always piping hot at any time of the day or night. It takes a flat water heating rate where such a rate is available.

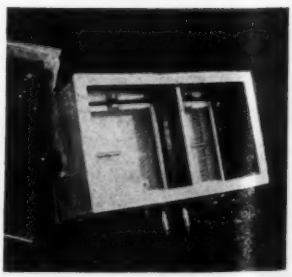
The success of this new electrical device for use on the farm is well assured, as there have been several put into operation during the last few months, and all are giving absolute satisfaction.

Those who have scalded many chickens say they get the best looking bird by first dipping it in water about 190° F. and then in water about 140° F., and this meets this requirement.

### How It Is Made

Mr. George's machine is made of galvanized iron over a frame of angle iron and the inside lined with copper. Between the inside and outside walls is a 2½" space, filled with heat insulator. The inside is divided into two compartments, the small one containing water at 190° temperature and the larger one at 140°. Each tank is fitted with a screen false bottom that may be removed in order to clean out the feathers that collect in the water. Beneath the screen is a 750-watt water heater on a thermostat. The outside dimensions of the scalder are 39" long, 24" wide and 31" high. Depth inside is 19". An insulated cover is placed on top when not in use.

The scalder is also made in other sizes, to handle from 100 to 500 birds a day.



**Inside View of Electric Chicken Scalder.**

# THE SAME OLD HOKUM

SINCE the first *Knob & Tube Wiring System* was installed back in '85, there have been substitutes and substitutes, each heralded with the parrot call—*"Here's something just as good."* During that span of 44 years, the *Knob & Tube System*, employing hard vitreous porcelain for insulation, has steadfastly remained the basis for comparison and today need recognize no peers . . . .

Quite naturally the farmer's most feared enemy is *FIRE*. A direct query to some 18,000 electrical contractors failed to reveal a single case of fire chargeable to the failure of *Knob & Tube Wiring*. In one state for a single year there were 532 electrical fires. The Chief Electrical Inspector of that state reports that *none* of these fires could be charged to *Knob & Tube Wiring*. Another state inspector in an agricultural district officially reported "this fire furnishes further evidence of the *superior* insulating qualities of *Knob & Tube* work compared with—", etc.

*Lightning* is another arch enemy of the farmer, and should therefore be well guarded against. One inspector reports —"I know of several places where lightning has broken the system down. This could not happen with *Knob & Tube* work if properly installed." In other words, why pull "hot" wires through a *conductor* when those same wires can be strung on *non-conductors!*

Your local electrical-contractor is well qualified to discuss the *Knob & Tube Wiring System* with you. His interest lies in giving you a *SAFE* wiring installation at the least cost and a job he can stand back of. His experience, you will find, points with approval to the *Knob & Tube System* because it is likewise Strong, Dependable, Unaffected by Moisture, Immune from Carbonization, Insures Long Life, and because it utilizes the *oldest* and *most reliable* insulation yet developed—*Porcelain*.

*Call in your own Contractor-Dealer for further particulars and estimates on Knob & Tube wiring; or write the following sponsor manufacturers.*

PORCELAIN

KNOB & TUBE WIRING

SAFE
DEPENDABLE
ECONOMICAL

**Illinois Electric Porcelain Co.**
Macomb, Ill.

**Knox Porcelain Corp.**
Knoxville, Tenn.

**Porcelain Products, Inc.**
Findlay, Ohio

## Washing Fruit

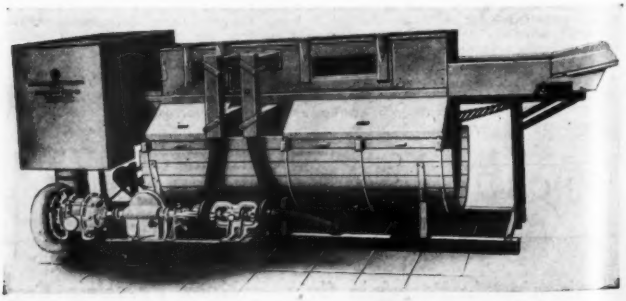
*(Continued from page 22)*

rinsing. In some types of machines the rinsing water is sprayed on the fruit in the same manner as the washing water. This method usually gives the best results. Proper rinsing should remove all traces of acid as well as any decay-producing spores that may still be attached to the fruit. A good method of testing the effectiveness of rinsing is to apply the tongue to the calyx end of the fruit after it emerges from the rinsing water. A taste of tartness will be found if any acid still remains. Hydrated lime is sometimes used to advantage as an additional precaution in the rinse water. Lime neutralizes hydrochloric and other acids that may be left on the fruit. Lime also seems to possess certain fungicidal properties against decay organisms, and is especially valuable where it is difficult to get an abundant supply of rinsing water. One or two pounds of hydrated lime to the 100 gallons of rinse water can be used very effectively.

Although no serious difficulties seem to be experienced from fruit not thoroughly dried at the time of packing or storage, reasonable drying of the fruit is desirable. Some machines dry the fruit by directing forceful air drafts against the fruit in such a way as to blow the moisture from the fruit. This seems to be one of the most rapid and successful methods of drying. Another type of machine is equipped with towel wipers that pass over the fruit as it moves forward over the conveyors. Still another type uses brushes, while in some cases the fruit is merely packed in boxes and allowed to dry by natural means.

Any washing equipment which supplies the solvent solution to the fruit by diffused spray, flood wash, flotation or a combination of these methods should give satisfactory results for ordinary cleansing requirements provided all desirable precautions in regard to proper washing have been taken. The washing equipment should be of durable construction and dependable in service, with the purchase cost as low as is consistent with the results to be secured. It should wash the fruit clean without injury and should dry the fruit quickly. A good size washer for small grower who packs his own fruit is one with a capacity of about 500 bushels in ten hours.

Modern fruit washing equipment not only removes the spray residue and enables the fruit to meet the requirements of health authorities, but the fruit's appearance is greatly improved, thus adding to its salability. Washing lends itself to small scale as well as large scale operations, increases the amount of "extra fancies," speeds up sorting and packing, and can be done at moderate cost. With modern



**Small 500 bushel capacity electrically operated washer. This size is especially suited to the small grower.**

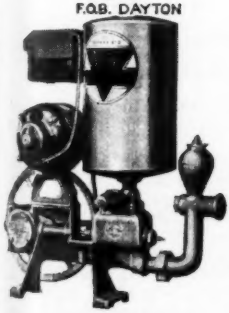
JUST LIKE CITY WATER SERVICE

# RUNNING WATER *for* MOTHER~

COMPLETE WATER SYSTEMS *as low as*

**$69.50**

F.O.B. DAYTON



**A REMARKABLE VALUE!**

The Duro Fresh Flow, Automatic, Electric Water System has a capacity of 250 gals. per hour, and costs only $69.50 f.o.b. Dayton.

There's a wonderful little mother on a farm in Iowa who is the happiest woman in the world! Now, water in abundance is hers at the turn of a faucet. And water under pressure has brought a gleaming bathroom into her home. What joy! What comfort! Gone are the weary days when the water had to be pumped and carried. And, as in thousands of other farms, Duro has replaced the lines of care into smiles of *real living* on the sweet face of this little mother in Iowa.

If the most wonderful woman in all the world is still pumping and carrying water on your farm, why not see about getting that Duro Water System now? It's *easy* to own a Duro. You can buy a complete Duro Water System for a small down payment and then regular easy payments. The nearest Duro dealer or factory representative will advise you and estimate on your requirements.

***Send in coupon below for complete information on Duro Water Systems***

**THE DURO COMPANY**

**537 Monument Ave., Dayton, Ohio**

***"Duro—Without a fault"***

*Cut off and Mail*

**DURO** *Automatic* **WATER SYSTEMS**

**THE DURO COMPANY, 537 E. Monument Ave., Dayton, Ohio**

**Please send me full information on Duro Water Systems, and free advisory service on my requirements.**

Name ..... Address.....

Equipped with gas engine for homes without electricity

*Now*

**a Washing and Ironing Machine Combined**

***At a price formerly asked for a washing machine alone***

WOMEN on the farms—you can now be rid of the drudgery of both washing and ironing, and pay no more than you have been asked for a good washing machine.

The Hurley Machine Company has just perfected this complete laundry unit—the first and only machine of its kind. It combines the Thor Agitator—world's most thorough and efficient speed-type washer—with the New Thor Rotary Iron, that does your ironing in one-fifth the time required by hand.

The Thor name on this new laundry unit is your assurance of lasting satisfaction. Write us for illustrated booklets describing this and other Thor home laundry equipment.

**THE HURLEY MACHINE CO.**
**22nd Street and 54th Avenue**
**Dept. E9 Chicago, Ill**

washing equipment, individual as well as community packing plants have washed fruit at a cost of from one to two cents a bushel.

In selecting fruit washing equipment it is desirable to secure the descriptive catalogues of all manufacturers of such equipment. The following bulletins will also be of considerable value to any grower contemplating the purchase of such equipment. "Arsenical Spray Residue and Its Removal from Apples and Pears"—Bulletin No. 226 of the Agricultural Experiment Station, Pullman, Wash. "The Removal of Spray Residue from Apples and Pears in Washington State"—Bulletin No. 142, Agricultural Experiment Station, Pullman, Wash." "Removal of Spray Residue from Apples and Pears in the Pacific Northwest"—U. S. Dept. of Agriculture, Circular No. 59. Instructions for the construction of a home-made washer can be secured from the Oregon Agricultural Experiment Station, Corvallis, Oregon.

## Oven Canning

(*Continued from page 24*)

temperature tables they recommend for canning in your part of the country.

The process is all very simple. You pack the fruit or the vegetables in the jars cold or hot, just as you like. The way that makes your particular public smack its lips is the method to cling to here. If you have been using the cold pack method, keep right on. If you have been preheating the fruit or vegetables before you pack them into the jars; that is all right. The actual sterilizing that is the secret of canning will be done in the oven anyway.

You fill your jars, adjust the tops, leaving them loose so that hot air can escape, and put them in the preheated oven. The top burner must be off for the direct heat from it might break the jars.

You set the jars about two inches apart to let the heat circulate properly, and if you are a careful housewife, you will probably set them in a shallow pan, so in case

of the highly improbably accident, you will have the pan and not the oven to clean.

**Test Each Jar for Leaks**

Then you just shut the door and watch the clock while you are filling the next jars, or going about your other work. It is as simple as baking bread.

This chart has given us excellent results here in the Middle West.

## Refrigeration for the Dairy Farm

(*Continued from page* 15)

produce covection currents, and yet not render valuable space useless, it should be so supported as to make its removable possible in case of needed repairs.

The chief difference between the "walkin" and "non-walkin" boxes is in their size. The construction is similar, with the possible exception of the floor. The "non-walkin" type is easily made portable and can be manufactured and sold as a unit. Several of the refrigerator manufacturers now have milk cooling cabinets for sale.

The advantages of the dry system are:

1. *Cooling is quick.*
2. *Dry cold storage is easily provided.*

*With General Electric Motor*

# Your Washing Done

***For the price of two 2-cent stamps***

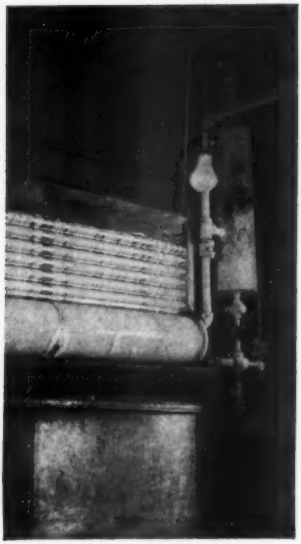
THIS is a message to every farm woman who is making the great sacrifice of health for the sake of a few cents a day.

*It isn't worth the price*! The day of back-breaking drudgery on the farm has passed.

The originator of the electric washing machine offers you the fastest, most modern washing machine on the market. It does *all* the work. It washes a tubful of clothes sparkling clean in 5 minutes. It has fewer moving parts than any washing machine on the market. No belts to slip and break—nothing to get out of order.

And this is the lowest priced quality washing machine on the market. We will gladly mail you fully illustrated booklets on all Thor products. Write to

**THE HURLEY MACHINE CO.**
**22nd Street and 54th Avenue**
**Dept. E-9 Chicago, Illinois**



A direct expansion cooler—the bottom drum being the evaporator on the ½-ton refrigerating machine—on a 90 cow daily farm in California.

3. *Cans or crates are easily handled.*

4. *It stores refrigeration, if brine system is used.*

5. *It can be used for any size or type of container.*

The disadvantages are:

1. *First cost is high.*
2. *It occupies more space.*
3. *More equipment is necessary. (Brine tank and pump and sometimes brine pump motor.)*

## Water by Wire

(*Continued from page* 30)

satisfactorily in the pit provided that no free water gets on or into it. The heat generated while in operation will keep the motor dry. A separate electric circuit of ample size should be installed for the pump motor.

The well pit should be about seven feet deep and preferably rectangular in shape, the dimensions being four feet by six feet. Square pits should be at least five feet square and round pits at least five feet in diameter. Manhole covers are made either out of reinforced concrete or planks covered with tin. The plank cover has the advantage of being easy to construct and light to handle. A ring is fastened in the cover for lifting it off. The manhole has an inch shoulder around the edge of it to prevent water from entering the pit.

The pump may either be mounted on a block of concrete about a foot high around the well casing or a wooden platform laid directly on the concrete floor with the pump and motor bolted to it. The latter is easily installed and changed.

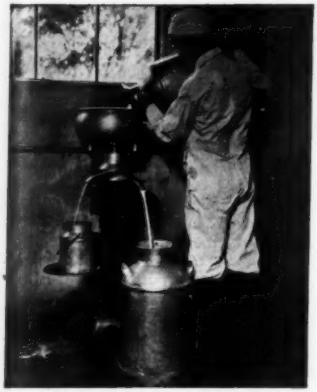
The size of drop pipe to be used varies largely with the type of pump and type of rod used. The pipe line between the pump and pressure or gravity tank should be one inch in diameter or larger.

Considering the convenience offered and drudgery eliminated, the cost of electrical energy for pumping water is negligible. From 25 to 30 kilowatt hours per month will ordinarily pump all the water required by a family of four and for 30 head of stock.

**Capacity of Compressor Required for a Given Quantity of Milk Cooled Per Day Using a Brine System.***

| Capacity of Compressor in Tons and in Pounds of Ice Per 24 Hours | | Gallons of Milk to Be Cooled Per Day |
|---|---|---|
| Tons | Pounds | |
| ¼ | 500 | 50-100 |
| ⅜ | 750 | 100-150 |
| ½ | 1000 | 150-200 |
| ¾ | 1500 | 200-275 |
| 1 | 2000 | 275-350 |
| 1½ | 3000 | 350-400 |

*For direct expansion systems, the capacity of the compressor should be increased approximately 50% for cooling the same qualities of milk.



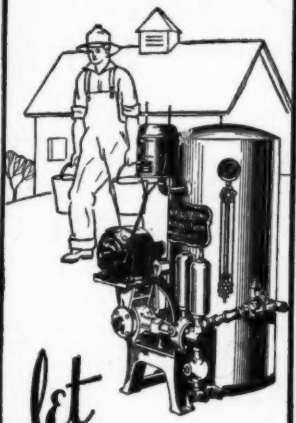
## Throw the Switch —and Let De Laval Do Your Separating and Milking

A THROW of the switch and your electrically operated De Laval Separator or Milker is at work for you doing your separating and milking in the most efficient manner possible; relieving you of monotonous, unpleasant work.

Electrically equipped De Laval Separators and Milkers operate economically and pay for themselves. There is a De Laval Separator for every need and purse and two great De Laval Milkers.

**The De Laval Separator Co.**

New York 165 Broadway — Chicago 600 Jackson Blvd.
San Francisco: 61 Beale Street



## *let a* PAUL *Water System carry the Water!*

**PLENTY of water at a turn of the faucet... *fresh, clean, cool*! Water for kitchen, dairy, barn... for fire protection too. No more back-breaking pumping and carrying. *Increased profits* on live stock will pay for it every year.**

**The Paul will work for you for a few cents each day! And the first cost is *much lower than you expect.* Use the coupon now and let us recommend the system for your needs.**

FORT WAYNE ENGINEERING & MFG. COMPANY
Fort Wayne, Ind.

*Pumps and Water Systems* — *Water Softeners Heaters*

Ft. Wayne Engineering & Mfg. Co.
*1722 N. Harrison,* Ft. Wayne, Ind.
Send complete information and prices on Paul Water Systems.

*Name*_____

*Address*_____

# Electric Household Refrigeration

*By* W. T. ACKERMAN
Research Specialist in Rural Electrification

AS we entered the house recently, after an absence of two or three days, my wife said, "Yes, the ice man is here." Involuntarily I looked in the direction of the refrigerator expecting to see some one. My wife, following my gaze, started to laugh. The electric refrigerator was running.

As we had neared town I had asked if she wanted to stop at the store for anything, and she replied, "No, there's plenty of food in the refrigerator." It was just another reminder that now we have ice by wire we don't have to wonder whether the ice man left the ice, whether the food is spoiled or whether we will have to "eat out" until the stores open on the morrow.

So much has been printed and said about the superior qualities of electric refrigeration for household use, that a repetition of its merits is not supplying the information that farmers and home owners in general are seeking.

### Points to be Considered.

There are just one or two or three general points to consider, and they are all important. First—you are going to pay more than you planned and hoped to. Do not try to save $50.00 or more by buying equipment that is manufactured by some little known or loosely established company. We all know what we went through with the individual lighting plants and tractors when they first came out. Every Tom, Dick and Harry that owned an automobile factory thought he could build tractors and what wonderful machines those turned out to be that were made by the inexperienced manufacturer. First then—stick to the good standard makes of electric refrigerators. There are more of these than you will want to consider, but it is the first guide-post to follow.

Second—out of this group look over the local sales and service company handling each make of machine. This is the most important element. In the last analysis you are buying a service and not just another machine. What you want is continuous, uninterrupted refrigeration. To accomplish this you need to deal with a company (your local dealer) who is well qualified and fitted to give you the most intelligent advice on the size and style of equipment you need, see that it is properly and carefully installed, and maintains competent service-men, who can give you quick, efficient and reasonable service when you need it.

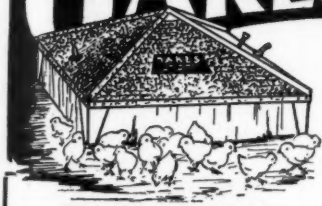
Having done this much you will find that the possible number of machines you are seriously considering has been reduced to a reasonable number.

The third point is the matter of cost. Machines are classed, roughly in three groups—low-priced or cheap, medium priced and high priced. Avoid the first group. The second group is a good safe buy and of course the third is fine if you can afford it, but not essential to successful operation.

Where shall we place this refrigerator when we get it? There are two considerations here that are of importance—(1) as cool a location as is consistent with (2) convenience. Compromise on these two points. One is equally as important as the other. A cool location—away from the sun, heat or moist air means less work for the machine to do, therefore, lower current costs.

On the experimental farms in the New Hampshire project, refrigerators were placed in the kitchen, dining room, pantry and a room just back of the kitchen—but they were all placed so they were convenient. Of course different results were obtained be-

# OAKES ELECTRIC BROODERS



***Economical Automatic Fumeless—Safe and Sure***

Oakes Electric Brooders are made in the following four sizes:

| Cat. No. | Size | Chick Capac. | Wt. | Each |
|---|---|---|---|---|
| G-90 | 22-in. | 100 | 15 lbs. | $10.50 |
| G-91 | 32-in. | 250 | 35 lbs. | 16.00 |
| G-92 | 42-in. | 425 | 70 lbs. | 20.00 |
| G-920 | 52-in. | 650 | 100 lbs. | 24.00 |

Canopy and legs are built of heavy, durable galvanized steel. Heat loss is practically eliminated by using Insulite and Celotex insulation in the top.

## THE SURE, EASY WAY TO RAISE HEALTHY CHICKS

Here's the latest, most economical brooder for raising flocks of from 100 to 650 strong, healthy chicks. Proper temperature is automatically maintained by fool-proof thermostat and heat evenly distributed under entire canopy. There are no lamps or stoves, under the canopy to use up space, crowd chicks or cause a fire. Brooder is quickly installed by plugging cord into light socket and adjusting thermostat switch for desired temperature.

***See Our Exhibit at Your State Fair***

You can get Oakes Electric Brooders from your electric appliance dealer, public utility Co. or poultry supply dealer. Write for literature.

**OAKES MFG. CO., 77 Dearborn St., Tipton, Ind.**

# COOL YOUR MILK
## this Better Way—

Illustration shows complete Haven Farm Milk Cooling installation with all-steel insulated tank. Furnished either for belt drive from shafting or engine, or with direct-connected motor for electric power.

Quick, efficient cooling of milk immediately after each milking means sweeter, fresher *delivered* milk and cream.

*Act now* to get the benefits of Haven Milk Cooling this season! Installation is quick and simple. Complete system (tank and machine) can be put into actual operation 2 hours after delivery.

This Haven Refrigeration System is made especially for *farm milk cooling.* That is one reason why it excels in farm service. *Write today for complete information.*

HAVEN MANUFACTURING CO. - - Milwaukee, Wis.

***Dealers: A few good sales territories still open.***

**HAVEN** REFRIGERATION SYSTEM for FARM MILK COOLING

cause of the variety of conditions, but the one that had the coolest surroundings developed the lowest operating costs. The difficult problem is where the convenient and logical location for the refrigerator is warm. In such a case have the compressor unit removed and placed down cellar or in a cool entry not too far from the refrigerator. This may cost a little more, but it will be made up in the current saved, in a couple of years.

Perhaps you wonder if you can use your old refrigerator and put a unit in it. That all depends on how good that refrigerator is. It is possible, but in most cases not desirable. You wouldnt put your piano out' in the shed, so do not attempt to put a fine piece of equipment in an old worn-out or uninsulated refrigerator. You are saving a little money at the start that you will pay heavily for in current bills. If you choose your local dealer well, he will be a safe man to settle all these points for you. One point you may be particularly interested in is this: If you put a unit in your old refrigerator its resale value will be very low as compared to a complete cabinet unit. You may think that you will never sell this machine if you ever get it, but you never can tell.

*In the October issue, Mr. Ackermen will give some very interesting data on experimental work and tests conducted with refrigerating equipment for household use.*

---

**Reduces Hired Help**

We find *Electricity on the Farm* of great interest and help in developing the many uses of electricity on our farm. We had electricity for a number of years, and I have now contracted for the new farm rate as we want to make the fullest possible use of current to keep down the cost of farming. We want to add silo filling, threshing grain with a small farm thresher, grinding, hay hoisting and barn cleaning; also a hoist, and many other smaller uses for the current to reduce hired help.

Anton Janson,
Route 2, Pierz, Minn.

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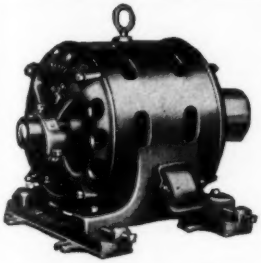
**A compactly arranged, but convenient kitchen. Note ice box at window.**



*5 Horse-Power Century Type RS Repulsion Start Induction Single Phase Motor*

Century

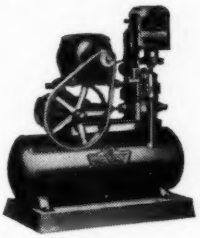
**Motors for Farm Work**

For more than 25 years they have been giving the year-round, reliable, uninterrupted service that is especially necessary during these months *when every day counts.*

CENTURY ELECTRIC CO.
1806 Pine St. St. Louis, Mo.

*40 U.S. and Canadian Stock Points and more than 75 Outside Thereof*

Century MOTORS



*Get a water system the DL Way . . . and let it* pay for itself

YOU know the benefits of dependable running water. You know how much added happiness it gives your family. You know it saves you time and money. You know that DL Water Systems are built to last a life-time and are priced as low as $75.00.

But do you know that DL Systems can be purchased on the General Motors easy payment plan, the same as General Motors cars? Do you know that a DL pump can be purchased on such small payments that it will actually pay for itself?

See your local dealer now and let him explain this easy payment plan or write to the factory for full details. You owe yourself and your family the comforts, the conveniences, the economies that only DL can give you.

DELCO-LIGHT COMPANY
*Subsidiary of General Motors Corporation*
Dept. P-94 Dayton, Ohio
*Also Manufacturers of Delco-Light Electric Plants*

DL ELECTRIC WATER SYSTEMS
Products of General Motors

*"The* GOLD STANDARD *of Quality"*

Where There Gets a DL Water System There's Got Something

## Farm Feed Mills

(*Continued from page 20*)

the storage bins. The openings in the bottoms of these three bins are so grouped that one large tapered metal spout covers them all and conveys the desired grain directly to the mill. In this installation the mill is not equipped with a blower but delivers its meal into the boot of the same elevator that is used for whole grains. By turning a wheel in the feed room the upper spout is directed over the desired bin. From the four small bins meal is drawn out through a common spout as needed.

This kind of mill may also be equipped with a blower for taking away the meal.

### A Satisfactory Layout

Another direct connected 5 h.p. outfit is on a large certified milk farm in Wisconsin. It grinds for about 200 cows, 150 young stock and 15 horses, and definitely proves that mills of this size are plenty large enough for any ordinary farm. Here the motor is placed in the driveway so as to be free from dust and the shaft to the mill is run through the wall of the feed room. A unique feature of this installation is the provision for removing tramp iron from the grain. Nails, washers, etc., are not likely to injure the mill and since they are broken up into rounded pellets instead of ground to sharp edges they are not so dangerous to livestock.

### Taking Out Metal

But the superintendent of this highly specialized dairy farm informed me, "We aren't worried about the mill, but we don't intend to feed our cows old iron if we can help it." So they made a short section of the top of the sloping wooden grain spout removeable. And through this board they inserted a series of big horseshoe magnets. The grain, moving slowly down the

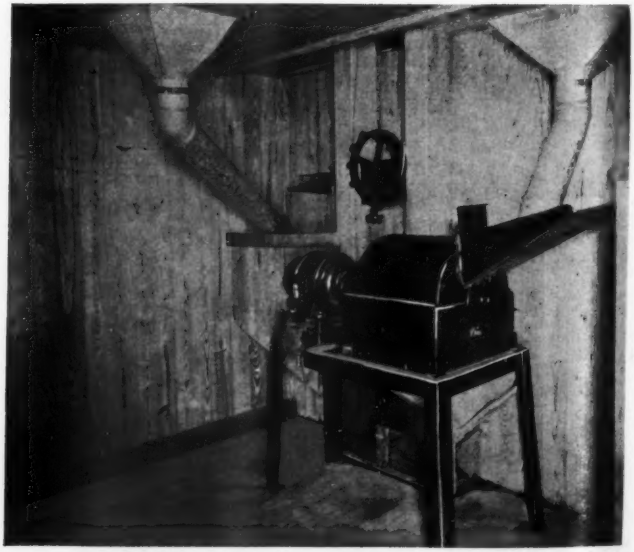


**Fig. 5. A Neat, Direct Connected Outfit.**

# SHARP TOOLS CUT FASTER!

Always true on the farm where good tools in good condition are needed at every turn.

But the same old hand or foot power grindstone will dull man or boy faster than it sharpens their tools. A mean, tiresome chore. No wonder the axe and hatchet and chisel used to struggle along through their work with many a nick and flat edge. Handy for the kitchen knives, too.

With electricity and the new LUTHER grinders you can always have sharp cutting edges on every tool.

Model illustrated is combination sickle and tool grinder and costs only $11.00 without motor. Circular sent on request.

Our jobbers will serve you through any dealer you prefer, or write us for name of our nearest distributor.

## LUTHER, INCORPORATED

*Pioneer Specialists in Abrasive Sharpeners*

**280 So. Water St.** **Milwaukee, Wis.**

Leading Fancier-Breeders, Hatcheries, State Colleges, Experiment Stations now use and endorse the

# PETERSIME *Electric Incubator*

The exclusive patented Petersime principle—which can't be duplicated—is responsible for Petersime's high average hatches, quality chicks and low operating cost. Power companies for these same reasons are recommending the Petersime as the most efficient incubator. Ask your power company for detailed information, and write TODAY for a complete catalog.

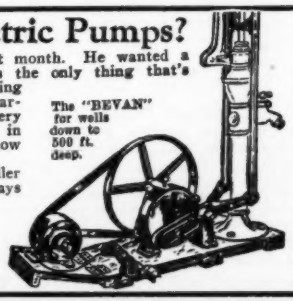
Address—

**WELLINGTON J. SMITH CO., 936 Davis-Farley Bldg., Cleveland, Ohio**

# Why Buy *Two* Electric Pumps?

A farmer drove up to our factory last month. He wanted a little pinion costing only 50c. "That's the only thing that's gone wrong with my BEVAN Pumping Unit in over two years—that pinion wearing out. It's been lifting water every blessed day, 350 ft. with a 6" cylinder in the well. Just as quiet and steady now as the first day!"

Yes, folks, the only pumper with roller bearings will last a lifetime, and always run *quietly* at minimum power cost.



The "BEVAN" for wells down to 500 ft. deep.

**Write for prices, and free circular on our Complete Fresh Water Systems.**

**ACME MACHINE CO.**

**2901 Fremont Ave., So., Minneapolis, Minn.**

# Electrify your sewing machine

*Stop back aches*

No more pedal drudgery. You can attach the Hamilton Beach Home Motor to *your own* sewing machine—the machine you already know—and let the motor do the work. It makes your old machine as efficient and easily operated as the most expensive electric machines. Attached instantly. It makes sewing a pleasure. Sold at stores.

## *Sews Twice as Fast*

Make 2 dresses while now making 1. Pays for itself in a few days' use. Electricity cost less than 1c an hour. Pedal gives absolute control of sewing speed. The Home Motor with attachments also mixes cake, whips cream, beats eggs, sharpens knives, polishes silverware or runs electric fan.

## *Free Booklet*

If you have a treadle sewing machine, send for free booklet telling how the 1,000,000 Hamilton Beach sewing motors now in use save hundreds of hours' work and make housework a joy. Price is very low. Mail coupon today —NOW.

**Hamilton Beach**
**Home Motor**

HAMILTON BEACH MFG. CO.
M6056 H. B. Bldg., Racine, Wis.

Without obligation, please send booklet explaining how Home Motor saves me many hours of work every week at a saving which pays for motor in few days.

*Name* .....
*Address* .....
*Town*..... *State*.....

# THERE IS LIGHT!

The "CHICK-LITE"
For Chickens—Pheasants—Turkeys, etc.

The "POULTRI-LITE"
For Large Flocks—in exercise rooms, Laying Houses, Storage Brooders, etc.

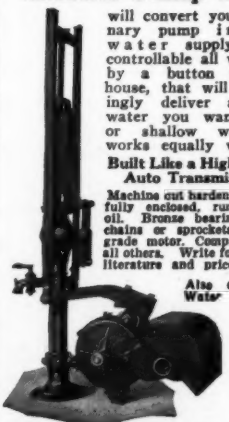
The "STOCK-LITE"
For Cattle—Swine—Sheep, etc.

The strong Ultra-Violet Rays from these lamps assure healthier animals and fowls, greatly increased production of highest grade offspring.

Obtainable ONLY thru the use of Dr. Chesney's "Sunshine Carbons." An exclusive feature of these lamps. Let us give you complete information.

**RUSSELL ELECTRIC CO.**
380 West Huron St., Chicago, Ill.

# The LAUSON
## Electric Pump Jack



will convert your ordinary pump into a water supply unit, controllable all weather by a button in the house, that will unfailingly deliver all the water you want—deep or shallow well, it works equally well.

**Built Like a High Grade Auto Transmission**

Machine cut hardened gears, fully enclosed, running in oil. Bronze bearings. No chains or sprockets. High grade motor. Compare with all others. Write for special literature and prices.

Also complete Water Systems

**The John Lauson Mfg. Co.**
700 Michigan St., New Holstein, Wis.

# Cover Title Contest Rules

**Only the farmers or members of the farm family, to whom this magazine was sent, are eligible.**

**Only one title may be submitted.**

**Use the form below or write your answers on a plain sheet of paper in similar form.**

**Be sure to answer question (a).**

**Write plainly and send your suggestion to the Title Editor, ELECTRICITY ON THE FARM, 225 West 34th St., New York, before October 1.**

In addition to the $25 cash prize for the best title to this month's front cover, we will pay $5 for each of five titles given honorable mention. In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled. The winners will be announced in the November issue.

## Winner of the July Contest

***First Prize***

**Busy on the Lighting Problem**

**WALTER WILSON, Box 147, Haskettstown, N. J.**

And the following titles have been selected as the winners of the five $5 cash prizes:

"Preparing to Boost the Study of Electricity on the Farm," Rupert B. Wicks, R. F. D., Middlefield, Ohio.

"Deeply Interested in the Lighting Problem," John J. Wheeler, North Bangor, N. Y.

"About to Receive a Shock While Reading the Current News," Ashley Brecht, R. R. 8, Springfield, Ohio.

"Boosting Electricity on the Farm," C. Ely Wickham, Maple Grove Fruit Farms, Hector, N. Y.

"Local Market Prediction for July 4th: A Sudden Rise in Marcels and Rocking Chairs," Myra L. Barnhart, R. 2, Menomonie, Wis.

* * *

Through an oversight, the title submitted by Mrs. G. L. Studor of Roanoke, Ill., for the May Cover Title Contest, was omitted from the list of the winning titles in our July issue.

My Title for September Front Cover picture is.....

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(a) Which dealers do you buy your electric farm equipment from? Please check—

Farm Implement ☐ Hardware ☐ Power Company ☐

Electrical Contractor Dealer ☐ Mail Order House ☐

Name.....

Address.....

**Fig. 3. Driving Mill and Bucket Elevator from the Same Motor.**

chute, passes between and among these magnets and as there is some vibration, all iron is attracted to the magnets and clings there. From time to time the cover is raised and the iron is removed.

I have not touched on the grinding of ear corn for two good reasons. In the territory with which I am most familiar practically any farmer who would be interested in doing his own grinding already has corn silage. Rations containing corn silage are ordinarily bulky enough without adding corn cobs. For dairy cows bran is far better than corn cobs anyway. **The first reason** then is that under our conditions the problem of ear corn grinding is not especially important. And the second is that it has not yet been completely solved.

I have also avoided discussion of roughage grinding. With small powered mills it is very slow. At present it cannot be done without constant attention, and even under favorable conditions it is an extremely dirty, disagreeable, job. There is also a grave question as to whether it is generally worthwhile. The literature on the subject is voluminous, but I believe it is well summed up by Professor Forbes of the Pennsylvania Institute of Animal Nutrition who says, "Grinding roughage for cattle is like having a perfectly good dog and doing your own barking."

## Real Farm Relief

In the barns my husband has an electric motor for milking, which has proven more efficient in every way over the old gas engine formerly used.

We are planning now for a bathroom, the water to be pumped by an electric system from a spring nearby.

Then when we finally realize our dreams of an electric range and refrigerator, it will truly mean to us "Real Farm Relief."

Mrs. G. N. Blaisdell,
Smith Basin, N. Y.

**CLASSIFIED ADVERTISING**

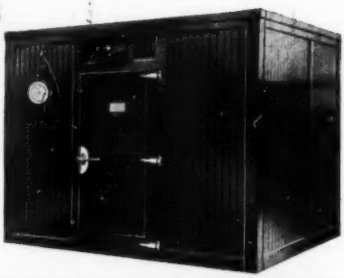
**INVESTIGATE** the proven records of economical operation and success of the LYON IMPROVED ELECTRIC BROODERS. Send for free authentic information and reports on electric brooding. Also ALARMS, Power-off, Temperature, Burglar, Heating & Thermostatic Supplies. Interesting circulars on modern poultry equipment upon request. Lyon Electric Co., Dept. FF, Box 1436, San Diego, Calif.

## SMITH ELECTRICS

32,000 Eggs 30,000 Eggs

***The Farthest Step Ahead in Electrical Incubation***

First in performance, results and quality chicks. Lowest in current consumption and cost of operation—highest in profits. The outstanding incubator of today. Write for new electric catalog.



**The Smith Incubator Co.**
3192 W. 121st St. Cleveland, Ohio

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## NOW—a BIG BURKS Super-Turbine PUMP
### Model D

Same style and fine performance as the famous smaller Burks Pumps. Three sizes: 600, 800 and 1,000 gallons per hour. Only 1 moving part—wear reduced to smallest possible minimum. You will get practically a lifetime of trouble-free service from a Burks. Write for information and prices.

**DECATUR PUMP CO.**
Decatur, Illinois

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## Every farm should have one

A Gillette Portable Electric Clipping and Grooming Machine appeals to the progressive farmer, because of its reliability and ease of operation. It operates directly from any lighting outlet.

Clipped cows and horses are easier to keep clean.

Dealers—Send for attractive price list

Gillette Clipping Machine Co., Inc.
129 West 31st Street, Dept. 11,
New York City

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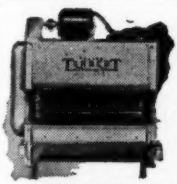

## Torrent Bunch Vegetable Washer
### A Truck Farm Need

Saves Its Cost in a Few Months.

Will increase your profits. Know more about this great time saver.

**Felins Tying Machine Co.**
1194-98 Fourteenth Street
Milwaukee Wisconsin

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## Make Ice Cream at Home The FREEZ-E-Z Way

Wash your dishes the Clean-E-Z Way, and Churn your butter the Churn-E-Z way. Saves all the hard work and saves 66% of your time. Just attach this simple device to the center post of any modern washing machine to do all this.

See your nearest washing machine dealer or write

COLE MANUFACTURING CO.
BIRMINGHAM, ALA.

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## To Our Farm Friends

Only products manufactured by reputable firms will be found in the advertising pages of "Electricity on the Farm." You may buy with assurance that they represent full value.

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Send for FREE Book

The Surge Milker

## Free Demonstration

Ask for free demonstration of this wonderful new milking machine. The Surge milks cows like no other machine ever milked cows before—milks them faster, cleaner and better! Has NO long Tubes—NO Claws. Overcomes bacteria troubles. Milk travels only 4 inches from teat to to pail. Write at once for free catalog and details of our Free Demonstration Offer, Easy Terms and rock bottom prices.

PINE TREE MILKING MACHINE CO.,
Dept. 55-16 2843 W. 19th St., Chicago, Ill.

# Ultra Violet Light

(*Continued from page 26*)

green, yellow, orange and red.

Outside of these colors are two bands of invisible energy much more powerful and of much more need to the human race and all animals and plants. One of these bands is called *Infra Red* and brings all the heat and energy of the sun to the earth. The other band is called *Ultra-Violet* and consists of chemical rays which tan the human body, bleach clothes, and, most important of all, cause the utilization of various mineral elements in the body economy.

There is in every animal or plant a substance called *ergosterol.* When Ultra-Violet rays fall upon *ergosterol,* it is converted into *Vitamin D*—the sunshine vitamin. It is the sunshine vitamin which causes the utilization of lime and phosphorus. Plants and animals not only have the power thus of forming vitamin D, but also of storing it just as a battery stores electricity. But the Vitamin D gradually grows weaker and weaker.

Science has absolutely proven in the last few years that rickets is caused by lack of lime. Science has also found out that any animal can be given all the lime in creation, but unless artificial sunshine or Vitamin D is given along with the lime, it cannot be utilized and ill-health results.

Rickets in children, chickens, cows, turkeys, etc., is all one and the same disease—a lack of lime.

Rickets in children and weak leg in poultry are one and the same disease. The same thing will cure both of them—plenty of uncontaminated, natural sunshine, small daily doses of artificial sunshine, or a guaranteed fresh cod liver oil. Cod liver oil is used for its Vitamin D content.

It is often impracticable to depend solely upon natural sunlight because there are months during the winter when the sunlight is of little value. That is the reason rickets start during the winter months.

It is a well established fact that those rays of the sun which form Vitamin D, and thus prevent and cure disease, will *not* pass through ordinary glass, clothing, fog, dust, or clouds. It is true that certain types of glass have been invented which will, for a time at least, pass a small percentage of these curative rays. But the glass is expensive, difficult to keep clean and gradually loses some of its power of passing those rays. As there are weeks at a time when there is no natural sunlight to pass through the glass even if it were new, and as the angle at which the sun's rays hit the glass is such that a large percentage of the rays reflected off, it is sometimes necessary to provide other sources of Vitamin D if children, young animals and poultry are to be kept in the best condition and have normal growth and development.

This lack of real natural sunshine led Dr. Neils Finsen to develop artificial sunshine (carbon arc lamps). The interesting thing about artificial sunlight is that all one needs to produce it is an inexpensive generator and electrical current. It enables the average farmer to have sunlight in the home, brooder house, dairy barn or creamery, whether it is summer or winter, day or night, clear or cloudy.

**Results of Sun Treatment: Left: 10 year old girl suffering from tuberculosis of both elbows, both feet and one knee. Right: the same youngster two years later, following treatment.**